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Gravity field modeling along the leveling lines

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Gravity observations along the leveling lines are used for very localized gravity field modeling. As the base functions polynomials of different degrees are applied and their capabilities in modeling gravity field of the Earth along the leveling lines are tested by using gravity values at the checkpoints along the leveling lines, which were not used in the modeling. Based on the numeric investigations the polynomial of degree 2 yielding the best results at the checkpoints. Since according to the numerical results, polynomials of degree 2 can reproduce the actual gravity field of the Earth by 12 mGal accuracy in average, the derived model can be used successfully for reducing the number of gravity observations long the leveling lines for the orthometric or dynamic height determination, which can reduce the observation expenses.